

## CLAIMS

1. Tooling for molding with keys for the production  
in particular of air intakes without clips of substantially  
5 tubular shape, characterized in that it comprises:

- a self-supported mandrel with keys comprising  
at least three sectors in the form of panels,  
namely at least two articulated sectors (S1, S2)  
retractable toward the center of said mandrel and  
10 a so-called key sector (S3) independent from the  
other sectors and insertable between these  
latter, thereby, by abutment, to define, by their  
external surface, a continuous surface  
corresponding to the internal surface of the air  
15 intake;

- means to lock said sectors (S1 to S3) in  
abutted position;

- and a control device, disconnectable from the  
mandrel, preferably automatic, for the relative  
20 displacement of the movable sectors to place them  
either in a molding position by abutment of the  
sectors, or in an un-molding position (S'1 to  
S'3) by retraction of said sectors inwardly of  
the mandrel.

25 2. Tooling according to claim 1, characterized in  
that it comprises:

- a mandrel (1) with keys comprising four  
sectors, namely a fixed sector (2) flanked by two  
30 other sectors (3) that are symmetrical and  
articulated on the fixed sector (2), and a key  
sector (5) independent of the others and

insertable between the two articulated sectors (3) and means (6, 7) to lock in the sectors in abutted position, the mandrel being thus self-supporting;

- 5       - a device (29 to 35; 45 to 49) for controlling the relative movement of the sectors (3, 5) to place them either in a molding position by abutment of all the sectors (2, 3, 5), or in an un-molding position by retraction of the three
- 10       movable sectors (3, 5) inwardly of said mandrel (1), the control device being disconnectable from the mandrel and,
- 15       - means permitting the transport and the rotation of the mandrel (1) in its molding position, constituted by two removable flanges (9a, 9b) adapted to the two ends of the mandrel, said flanges being connected by securement ties (10) and provided in their center with a socket (11) or the like for connection to drive means
- 20       for said mandrel in rotation about its axis.

3. Tooling according to claim 2, characterized in that said control device for displacement of the sectors (3,5) is constituted by a structure (20) for reception of

25 the mandrel in axially vertical position, comprising:

- first fixed means (24, 25) on which the fixed sector (2) rests,
- second movable means (29 to 35) on which the key sector (5) rests, these means being movable
- 30       diametrically of the mandrel,
- and third and fourth movable means (45 to 49) for support respectively of the two articulated

sectors (3), said third and fourth means each comprising a carriage (46) movable internally of the mandrel and carrying a drive means (49) on which rests one of said articulated sectors (3).

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4. Tooling according to claim 2 or 3, characterized in that the articulated sectors (3) and the key sector (5) are provided with locking means (6, 7) of said sectors in abutted position.

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5. Tooling according to claims 3 and 4, characterized in that said second means (29 to 35) carry said control means (36 to 44) of said locking means (6, 7).

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6. Tooling according to claim 5, characterized in that the locking means are constituted by two pairs of locks (19) for movable blocking in translation so as to secure or release two facing portions (14', 14'') of two adjacent sectors (3, 5) to be abutted and in that said control means of the locking means are constituted by a pair of articulations (37, 40) for the control of the translation of said locks (19), each controlled by a jack (43) carried by said post (36).

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